Patent Claims:

1-15 Canceled

16. (New) A method for the detection of local displacements and rotations, wherein a sum signal and additionally a difference signal are formed from two separately generated signals of two magneto-electric transducer elements (W1, W2) which are spaced from each other, and subsequently the sum signal formed and the difference signal formed are OR-operated.

17. (New) The method as claimed in claim 16, wherein the formed sum signal and the formed difference signal are respectively amplified at such a high rate that substantially square-wave signals are produced.

18. (New) A device for the local frequency doubling of moving incremental scales, for implementing a method for the detection of local displacements and rotations, the device including an encoder (1a, 1b, 1c), a magnetically sensitive transducer (9, 13), and a signal conditioning stage (6a, 6b) electrically connected with the transducer,
wherein the transducer comprises at least two sensorially active functional groups synchronously using sensorially active groups or sub-groups (W_1, W_2) which are locally offset in relation to each other by a local phase φ in order to scan the moving scale, with said functional groups comprising means enabling at least two independent partial signals to be produced having mainly the variation according to the functions

$S_1 = V * \sin(\omega t)$ and $S_2 = -V * \sin(\omega t) + \varphi)$.

19. (New) The device as claimed in claim 18, wherein the signals are processed in two or more separate signal channels which perform an equal amplification and/or filtering operation.

20. (New) The device as claimed in claim 18,
wherein the signals are sent to two separate computing units, and the signals produced therein are sent to respectively associated subsequent signal amplifiers with an equally high rate of amplification and an equally high switching hysteresis.

21. (New) The device as claimed in claim 20,
wherein the first computing unit continuously produces a signal sum (S_1 + S_2), while the second calculation unit continuously produces a signal difference (S_1 - S_2).

22. (New) The device as claimed in claim 21,
wherein the signal sum and the signal difference are united with an OR-element to form a new joint signal so that the latter exhibits the double frequency of one of the partial signals and mainly a symmetrical pulse-duty factor between leading and trailing signal edges.

23. (New) The device as claimed in claim 18,
wherein the joint signal that is doubled in its frequency in relation to the partial signals and produced from signal sum and signal difference is sent to a modulator continuously controlling a current source, with the frequency information of the joint signal being coded into the modulation pattern of the controlled current, said frequency information being decoded in the electronic control unit to which the sensor module is electrically connected, and interpreted as local frequency doubling of the moving incremental scale.

24. (New) The device as claimed in claim 18,
wherein it is connected to an electronic control unit (5) by way of a two-wire interface (12).

25. (New) The device as claimed in claim 18 to 24,
wherein the signals of the partial transducers (W_1, W_2) alternately undergo digital offset compensation by means of an electronic function unit (35)

comprising a multiplex unit so that pure alternating current signals remains as output signals (SC1, SC2).

26. (New) The device as claimed in claim 18,
wherein there is provision of an electronic functional unit (36) which additionally calculates from the signals SUM = $S_1 + S_2$ and DIF = $S_1 - S_2$ an identification signal for the direction of rotation and sends it to the modulator (6a).

27. (New) The device as claimed in claim 18,
wherein the sensorially active functional groups comprise separate transducer elements or partial transducer elements of a joint bridge circuit (21) in particular.

28. (New) The device as claimed in claim 27,
wherein the transducer elements or partial transducer elements are Hall elements and/or magnetoresistive XMR elements.

29. (New) The device as claimed in claim 18,
wherein the signals of the transducer elements are sent to a stage for the digital offset compensation (35).

30. (New) The device as claimed in claim 18, wherein it is adapted to function as an SWT-sensor.